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Exploring the Nuclear Chart with LeRIBSS and IRIS-2

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Exploration of the unknown regions of the chart of the nuclei is essential to both nuclear structure and nuclear astrophysics. Decay spectroscopy studies often provide the first results in previously unexplored areas. The development of new instrumentation dictates the isotopic reach of experiments. New exploratory decay studies have been performed at the Holifield Radioactive Ion Beam Facility on very neutron-rich, medium-mass nuclei produced in the proton induced fission of ^{238}U . A wealth of new data were obtained in the ^{78}Ni region on the r-process path. New nuclear lifetimes, decay schemes and decay branching ratios were measured using the recently developed facilities: Low-energy Radioactive Ion Beam Spectroscopy Station (LeRIBSS) and new Injector for Radioactive Ion Species (IRIS-2). The detailed studies of ^{79}Cu , ^{83}Zn and ^{85}Ga were possible owing to the high production rates, isotopic purity and experimental sensitivities provided by these new devices.